Andrew Schechtman-Rook
rook166@gmail.com — (917)-836-4267

EDUCATION

Ph.D., Astronomy, University of Wisconsin-Madison — December 2013
- Thesis title: *Lifting the Dusty Veil: Understanding the Stellar Structure of Spiral Disks*

MS, Astronomy, University of Wisconsin-Madison — June 2009

BS, Astronomy, Case Western Reserve University — May 2007

EXPERIENCE

Data Science Fellow — 2014-Present
The Data Incubator
- Trained a model on historical airline on-time arrival data to predict flight delay times.
- Designed web interface to simplify itinerary input and intuitively display results.

Postdoctoral Research Associate — 2014-Present
University of Wisconsin-Madison
- Improved agreement between numerical models and astronomical data by 20%, using vectorized numpy operations and specialized libraries to preserve run time.
- Built a fast Voronoi Tessellation algorithm to adaptively bin images, preserving spatial resolution while maximizing signal in images with over one million pixels.

Independent NFL Analyst — 2013-Present
phdfootball.blogspot.com
- Mined a play-by-play database containing over 500,000 records across dozens of tables for deep relationships between individual players as well as teams.
- Explained findings to a broad audience through both written posts and evocative figures.

Research Assistant — 2007-2013
University of Wisconsin-Madison
- Employed on-campus distributed computing resources to perform large-scale modeling in parallel, using over 20 years of computer time in 1 month.
- Assembled a hybrid C++/Python processing pipeline to process hundreds of high-resolution images with minimal user intervention, resulting in a 10x increase in analysis precision.
- Created a genetic algorithm in C++ to efficiently fit complex galaxy models to high-resolution images.
- Computed descriptive statistics about 200+ astronomical objects from raw survey data automatically via custom-built analysis software blending C++ and shell scripting programs.

Research Assistant — 2006-2007
Case Western Reserve University
- Designed and executed statistical analyses of simulated galaxy clusters to optimize strategy for future data acquisition.
- Used regression analysis to compute a conversion between astronomical filter systems.

SKILLS

Programming: C++, Python (including Matplotlib, Numpy, Scikit-learn, Scipy), shell scripting.
Databases and Web Design: Django, HTML, MySQL.
Operating Systems: Linux, Mac OS X.
Data Analysis: Bootstrapping; image processing and machine vision; machine learning; Monte Carlo; parallel and distributed computing; principal component analysis.
Oral Presentations: Gave 9 research presentations to both expert and non-expert audiences.
Writing: Published 3 first-author papers in leading scientific journals.